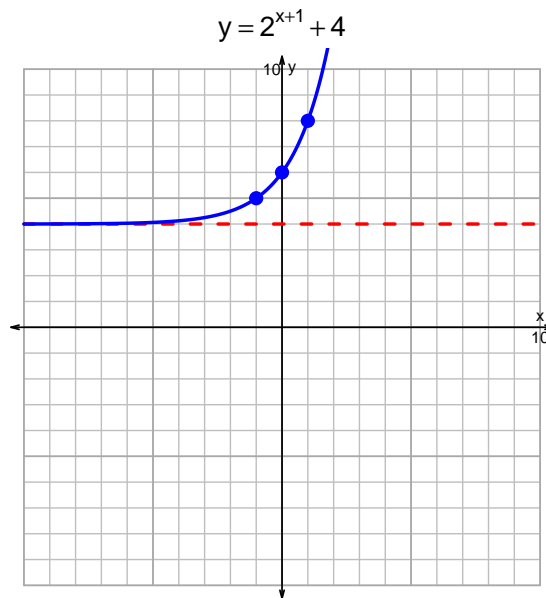
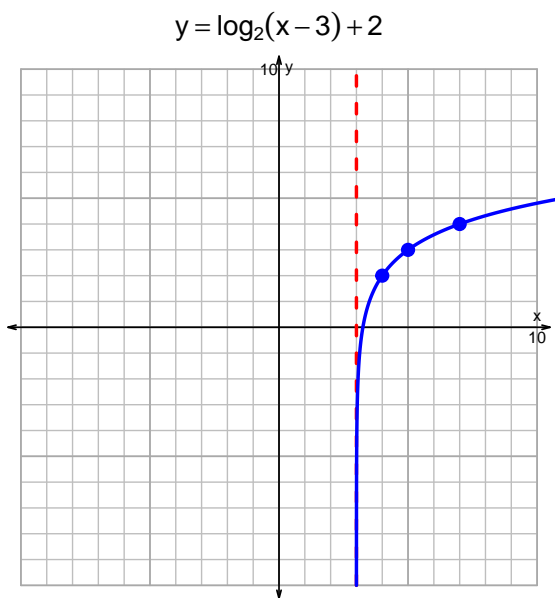


Name: _____

Date: _____

s18: EXP LOG (SLTN v359)

1. (10 pts) Graph $y = \log_2(x - 3) + 2$ and $y = 2^{x+1} + 4$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-19 = \left(\frac{-4}{3}\right) \cdot 2^{5t/7}$$

Divide both sides by $\frac{-4}{3}$.

$$\frac{19 \cdot 3}{4} = 2^{5t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19 \cdot 3}{4}\right) = \frac{5t}{7}$$

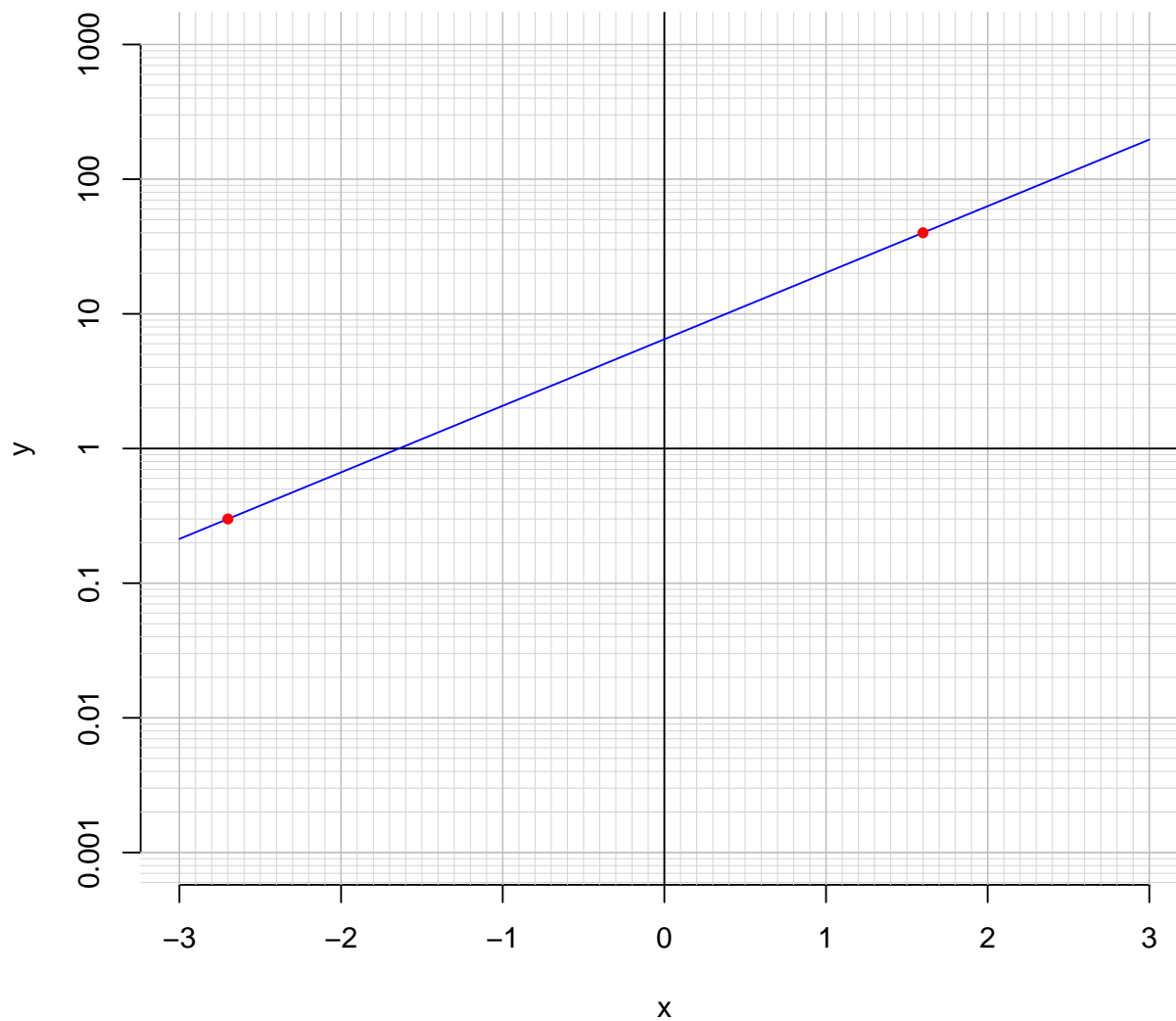
Divide both sides by $\frac{5}{7}$.

$$\frac{7}{5} \cdot \log_2\left(\frac{19 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{7}{5} \cdot \log_2\left(\frac{19 \cdot 3}{4}\right)$$

3. (10 pts) An exponential function $f(x) = 6.48 \cdot e^{1.14x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-2.7)$.

$$f(-2.7) = 0.3$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{1.14} \cdot \ln\left(\frac{x}{6.48}\right)$$

Using the plot above, evaluate $f^{-1}(40)$.

$$f^{-1}(40) = 1.6$$